Epitomes

Important Advances in Clinical Medicine

Dermatology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in dermatology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers, or scholars to stay abreast of these items of progress in dermatology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Dermatology of the California Medical Association, and the summaries were prepared under its direction.

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Cutaneous Manifestations of Human Immunodeficiency Virus Infection

CUTANEOUS DISEASE is extremely common in persons infected with the human immunodeficiency virus (HIV), with an incidence approaching 100%. Early in the course of the infection, often the only or most prominent manifestations are changes on the skin. Skin problems continue throughout a patient's lifetime and often notably reduce the quality of life because of the severity of the symptoms or the cosmetic consequences. Skin disorders seen in an HIV-infected person can be grouped into three large categories: infectious diseases such as persistent herpes simplex, mucocutaneous candidiasis, oral hairy leukoplakia (Epstein-Barr infection of the lateral aspects of the tongue), widespread or extensive facial molluscum contagiosum, dermatophyte infection, and bacterial folliculitis; noninfectious inflammatory diseases such as frequent drug reactions (especially to the combination of sulfamethoxazole and trimethoprim), seborrheic dermatitis, psoriasis, and other poorly understood pruritic dermatoses; and neoplasms such as Kaposi's sarcoma and lymphoma. In addition, HIV infection may prematurely age a person, leading to excessively dry skin, premature graying, and diffuse alopecia.

Infectious diseases, as a consequence of suppression of the immune system, still represent a major problem. Herpes simplex and herpes zoster are common, and now acyclovir-resistant strains have caused disease in patients with the acquired immunodeficiency syndrome (AIDS). A bacterium identical to or closely related to the agent causing cat-scratch disease has been shown to cause a chronic systemic infection in patients with AIDS or the AIDS-related complex. Skin lesions are usually the initial manifestation and appear as angiomatous papules, subcutaneous nodules, or cellulitic plaques. In addition, bone lesions and widespread visceral involvement may occur. Some of the initially identified patients died of airway obstruction. Erythromycin therapy is curative.

While the immune system is suppressed and unable to handle certain infectious diseases effectively, cutaneous hyperreactivity may also be seen. Pruritic dermatoses such as atopic dermatitis, photosensitivity, drug reactions, and severe insect bite reactions also may occur. These pruritic eruptions are still largely uncharacterized but substantially reduce a person's quality of life, especially those with otherwise minimally symptomatic disease. In Africa and Haiti pruritic eruptions are the initial manifestation of HIV infection in about 50% of patients.

Kaposi's sarcoma remains the most common malignant neoplasm in AIDS patients but appears to be largely restricted to homosexual and bisexual men. While the total number of cases continues to increase, the incidence is falling. Therapy includes both local treatment such as radiation therapy or intralesional administration of vinblastine sulfate or systemic therapy such as interferon-α or single or combination chemotherapy. The response rates are lower than those seen in patients with classic Kaposi's sarcoma, however.

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Diet and Atopic Dermatitis

DIET RELATES TO atopic dermatitis in two main areas: food allergy and nutrition. Cases of food allergy exacerbating atopic dermatitis have been reported sporadically since the 1930s, and clearly some patients have itching and erythematous flaring after eating foods to which they show positive results on skin tests. Points of controversy include the incidence of true food-induced flaring of atopic dermatitis and the latent period after ingesting the allergen. While many investigators insist on the existence of delayed responses, even as long as four days after food ingestion, such claims are hard to prove given the myriad of other trigger factors that might be active during a prolonged period. The only reactions subjected to rigorous proof have been those of relatively rapid onset, with morbilliform lesions and itching present 30

to 120 minutes after a double-blind food challenge in a large series of children. These reactions are often accompanied by gastrointestinal and respiratory symptoms and elevations of plasma histamine levels. The most common offending food allergens are egg, milk, peanut, seafood, wheat, and soy. Avoiding offending foods is generally associated with an abatement of the dermatitis. Follow-up studies have shown a loss of sensitivity with age in some children.

Incidence and prevalence figures cannot be gleaned from these studies as the subjects represent a highly selected, university referral population. A reasonable estimate suggests that 10% to 20% of children and less than 10% of adults have worsening of their eczema because of food allergy. Scratch test results and serum radioallergosorbent test levels show 80% false-positivity, but negative tests are 90% reliable in ruling out food-induced dermatitis. Restricting suspect foods to allow clearing of the dermatitis—usually for three to seven days—followed by challenge, in a blind manner, if necessary, is the only sure means of diagnosis. Wide-ranging restrictions based on positive skin tests are unreasonable and can lead to malnutrition. Restricting highly allergenic foods such as cow's milk, eggs, or peanuts from infant diets, while of unproved efficacy, may be worthwhile for the offspring of highly atopic parents, especially those with atopic dermatitis.

The main focus of the nutritional aspects of diet in atopic dermatitis has been, in recent years, the feeding of evening primrose oil. This may have originated from the erroneous association between eczematous skin and cutaneous changes induced by essential fatty acid deficiency. A later conceptual rationale implied that replacing deficient γ-linolenic acid (GLA), present in varying concentrations in evening primrose oil, might correct changes induced by excessive arachidonic acid-derived, proinflammatory eicosanoids. While the results of one clinical trial suggested positive effects, a subsequent study failed to detect any therapeutic benefit. Newer research indicates that high doses of GLA may have antileukotriene effects and a therapeutic benefit in some patients. A final resolution of this contentious issue requires controlled therapeutic trials with standardized material of known GLA content and careful monitoring of skin delivery. At present, dietary treatment with currently available evening primrose oil cannot be recommended for atopic dermatitis.

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Copper Vapor and Dye Laser Therapy for Cutaneous Vascular Disorders

SINCE THEY WERE FIRST introduced in the early 1960s, visible light lasers have played an important role in treating vascular conditions. Initially the blue-green light from the argon laser was used because its emission overlapped the absorption spectrum of oxyhemoglobin. It became readily apparent, however, that this laser-tissue interaction was imprecise and that there was also interference resulting from absorption by the melanin found in the overlying epidermis. The combined effect was the occasional production of scarring or permanent textural changes that provided an unsatisfactory cosmetic result.

As a consequence of these unacceptable side effects, improved light sources for treating vascular conditions have long been awaited, and recently three new laser systems have been developed, all of which are capable of producing yellow light. Improved laser-tissue interaction is possible with the use of yellow light at a wavelength of 577 nm because it is precisely absorbed by oxyhemoglobin at its β-absorption peak. In addition, absorption interference by epidermal melanin is substantially reduced at this longer wavelength, so there is less damage to the skin surface.

The argon-pumped tunable dye laser, the first of these new systems to be introduced, uses an argon laser to energize an organic dye solution to produce yellow light having a continuous output. Although this laser light can be mechanically or electronically pulsed, the duration of these pulses is relatively long—on the order of 0.05 seconds. Light from this laser typically is delivered in slightly overlapping 1- to 2-mm spots to the surface of large vascular lesions like port-wine stains or at spaced points along the length of telangiectatic blood vessels.

A new technique has been developed that uses a small beam (100 μm) from an argon-pumped tunable dye laser. With low power—0.08 W to 0.18 W—and continuous discharge, individual blood vessels in port-wine stains or telangiectasia are traced out and removed with the aid of magnified vision. This technique spares injury to the adjacent normal skin, minimizes damage to the overlying epidermis, limits postoperative wound care, and permits a rapid clearing of the vessels. Furthermore, in many cases substantial improvement can be seen after only a single treatment. This procedure permits safe and effective treatment of port-wine stains found even in areas that traditionally have been associated with a high risk of scarring, such as the upper lip and lateral neck. Children with port-wine stains also may be treated without substantial risk of scarring.

More recently, the use of short pulses of laser light to damage blood vessels selectively has been made possible with the introduction of a second type of dye laser, the flash-lamp-pumped pulsed dye laser. This laser system uses a flash lamp to energize an organic dye solution, which yields a 3- to 5-mm beam of yellow light at either of two wavelengths: 577 nm or 585 nm. The flash-lamp-pumped pulsed dye laser produces very short pulses of light—from 360 to 450 microseconds in duration—that closely approximate the thermal relaxation time for small blood vessels. This short pulse results in selective heating of the vascular lumen and immediate purpura formation but causes no substantial injury to surrounding tissue or to the overlying skin surface. The purpura that develops immediately after treatment will typically take between 10 and 14 days to resolve and is commonly replaced by a brownish discoloration that may last an additional week. This technique provides good results in treating small blood vessels, but multiple re-treatments are commonly required to produce satisfactory lightening. Although pulsed dye laser therapy initially was thought to have little risk of complications, abnormal textural changes, scar formation, and postoperative hypopigmentation have all been reported.

The copper vapor laser produces even shorter pulses of